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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/602,294  | 06/23/2003  | Venkat Selvamanickam | SPP 18.815          | 1196             |
| 26304   | 7590        | 02/22/2005           | EXAMINER            |                  |
| KATTEN MUCHIN ZAVIS ROSENMAN<br>575 MADISON AVENUE<br>NEW YORK, NY 10022-2585 |             |                      | MOORE, KARLA A      |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 1763                |                  |
| DATE MAILED: 02/22/2005   |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

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|                              |                        |                      |  |
|------------------------------|------------------------|----------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b>  |  |
|                              | 10/602,294             | SELVAMANICKAM ET AL. |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>      |  |
|                              | Karla Moore            | 1763                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 10-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,8 and 9 is/are rejected.
- 7) ☒ Claim(s) 6 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-9, drawn to a multi-chamber vacuum coating apparatus, classified in class 118, subclass 719.
  - II. Claims 10-21, drawn to a method for the continuous production of long lengths of HTS coated tape via the depositing of HTS material onto a translating buffered metal substrate, classified in class 427.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process, such as a process using a non-metallic substrate and/or a process depositing a material other than high-temperature superconductor (HTS) compounds.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a voicemail message from Mr. Serle Mosoff on 11/24/04 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-9. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of

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inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Information Disclosure Statement***

6. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

***Claim Objections***

7. Claims 4 and 6 objected to because of the following informalities: The preamble of each of these claims, recites "the method of claim 1"; however, claim 1 is an apparatus claim. Examiner has assumed that the wording was a mistake and that the preamble was meant to read "the apparatus of claim 1". Appropriate correction and/or clarification is required.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the

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examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-2, 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,453,264 to Maguire et al. in view of U.S. Patent No. 5,151,303 to Hales et al. and U.S. Patent No. 4,793,908 to Scott et al.

11. Maguire et al. disclose the invention substantially as claimed in Figures 1 and 9 and comprising: a vacuum coating apparatus for coating a substrate tape (not numbered in Figure 9) capable of utilizing pulsed laser deposition (PLD) and a reel to reel transport system (911 and 913) comprising: one or more deposition chambers (900) comprises a substrate heater (912, column 7, rows 52-53), a motorized target manipulator (918a) and at least one target (916) mounted on the target manipulator where the target manipulator imparts rotary motion to the at least one target (column 3, rows 37-45); the one or more deposition chambers each have the substrate heater and the target manipulator disposed therein such that the heater and the at least one target manipulator define a deposition zone therebetween; and the exterior wall of the apparatus contains openings for at least one laser beam (110).

12. However, Maguire et al. fail to teach the vacuum coating apparatus as a multi-chamber coating apparatus comprising a payout spool chamber containing at least one spool of uncoated substrate tape, a take-up spool chamber capable of accommodating at least one spool of coated substrate tape and the payout chamber, deposition chamber and take-up chamber each having an opening therein of sufficient dimension to permit at least one tape substrate to be inserted therethrough.

13. Hales et al. teach the use of a multi-chamber deposition apparatus in Figure 1, comprising a payout chamber (10b), multiple deposition chambers and a take-up chamber (10c), wherein each chamber has openings (29) to permit the insertion of a tape substrate therethrough for the purpose of reducing outgassing that occurs in the processing chamber by evacuating the pay-out and take-up chamber separately from the processing chamber over time, also the apparatus allows for changing the coils/spools easily without loss of vacuum and storage of a processed substrate in a protected environment until shipped or further processed (column 2, rows 18-21 and 40-44).

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14. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a multi-chamber apparatus with a payout chamber and take-up chamber connected to a deposition chamber through openings permitting insertion of a substrate in Maguire et al. in order to reduce outgassing that occurs in a processing chamber by evacuating the pay-out and take-up chamber separately from the processing chamber over time, also, to allow the coils/spools to be changed easily without loss of vacuum and to allow a processed substrate to be stored in a protected environment until shipped or further processed as taught by Hales et al.

15. Maguire et al. and Hales et al. disclose the invention substantially as claimed and as described above.

16. However, Maguire et al. and Hales et al. fail to teach the target manipulator also imparting oscillatory motion to the target.

17. Scott et al. teach oscillating the a target surface during a deposition process onto a substrate for the purpose of promoting a more uniform vapor cloud which enhances the uniformity of condensation of the vapor on substrate surfaces (column 5, rows 45-52).

18. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a target capable of oscillation in Maguire et al. and Hales et al. in order to promote a more uniform vapor cloud that enhances the uniformity of condensation of the vapor on substrate surfaces as taught by Scott et al.

19. With respect to claim 2, there is one deposition chamber in Maguire et al.

20. With respect to claim 4, the exterior wall of the apparatus contains openings for multiple laser beams. An additional laser beam from source (920) can enter through an opening in the chamber.

21. With respect to claim 9, the apparatus of Hales et al. also contains seals (column 2, rows 21-23) in the openings in the chamber walls to maintain a selected pressure differential between the different chambers.

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22. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maguire et al., Hales et al. and Scott et al. as applied to claims 1-2, 4 and 9 and further in view of U.S. Patent No. 4,389,970 to Edgerton.

23. Maguire et al., Hales et al. and Scott et al. disclose the invention substantially as claimed and as described above.

24. However, Maguire et al., Hales et al. and Scott et al. fail to teach the heater is a multi-zone heater.

25. Edgerton teaches the use of a multi-zone heater for raising and maintaining a continuous substrate at a predetermined deposition temperature, wherein the heaters/lamps are spaced apart along the length of travel to provide a desired heating profile (abstract). There are at least three zones created by heaters/lamps (see Figure 3A, 106).

26. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a multi-zone heater in Maguire et al., Hales et al. and Scott et al. in order to raise and maintain the continuous substrate at a predetermined deposition temperature using heaters/lamps that are spaced apart along the length of travel to provide a desired heating profile as taught by Edgerton.

27. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maguire et al., Hales et al. and Scott et al. as applied to claims 1-2, 4 and 9 and further in view of U.S. Patent No. 5,490,912 to Warner et al.

28. Maguire et al., Hales et al. and Scott et al. disclose the invention substantially as claimed and as described above.

29. However, Maguire et al., Hales et al. and Scott et al. fail to teach multiple targets are mounted on the target manipulator.

30. Warner et al. teaches placing multiple targets (Figure 2, 38) on a target manipulator (Figures 1 and 2, 20) for the purpose of introducing a fresh supply of target material without shutting down the deposition chamber (column 6, rows 19-34).

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31. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided multiple targets mounted on the manipulator in Maguire et al., Hales et al. and Scott et al. in order to introduce a fresh supply of target material without shutting down the deposition chamber as taught by Warner et al.

#### ***Allowable Subject Matter***

32. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

33. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach or fairly suggest the spool chambers are sized to accommodate from about 2 to about 20 spools of substrate tape or are sized to accommodate about 4 to about 12 spools of substrate tape.

34. Additionally, no other prior art was located which had the missing features/teachings detailed above and also the requisite motivations for combination with the prior art of record. Examiner notes that USP 6,602,347 discloses a payout chamber sized to accommodate two spools, however, *only one is a substrate spool; the other is an interleaf take-up spool*. USP Pub 2004/0040506 A1 discloses multiple payout spools that advance into a single deposition chamber; however, they are accommodated in individual payout chambers.

#### ***Conclusion***

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USP 5846911, USP 6022832, USP 6506439 each disclose an apparatus for laser ablation deposition of superconductor material.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571.272.1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore  
Art Unit 1763  
18 February 2005